

Application No. 09/723,697
Amendment Dated November 12, 2003
Reply to Office Action of May 12, 2003

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

21. (Currently amended) A method for producing a covered roll, the covered roll having a multi-layered construction, said method comprising the steps of:

- a. providing a roll core base, said roll core base having two ends, [[a]] an axial length therebetween and an outer surface;
- b. providing a dry under-layer formed of densely packed fibers;
- c. tightly wrapping said under-layer circumferentially around said roll core base;
- d. applying a covering layer over the dry under-layer to provide an annular axially extending resin infusion channel between said outer surface and said covering layer, said resin infusion channel being filled with said densely packed fibers of said dry under-layer; [and]
- e. providing openings through said covering layer in the vicinity of each of said ends of said roll core base, said openings extending to said resin infusion channel; and
- f. [infusing] applying a low-viscosity thermoset resin with vacuum [into said dry under-layer] to said openings to cause said resin applied to said openings in the vicinity of said ends of said roll core base to infuse into said densely packed fibers over substantially the entire length of said roll core base and to intimately bind with said densely packed fibers of said under-layer within said resin infusion channel.

22. (Currently amended) A method as in Claim 21 wherein said step of infusing a thermoset resin into the dry under-layer includes the sub-steps of:

- a. drilling ~~entrance and~~ vacuum holes through the covering layer in said vicinity of said [near opposite] ends of the roll core base which extend into the under-layer;
- b. sealing off ~~the entrance holes~~ said openings;
- c. creating a vacuum within the under-layer;
- d. sealing off the vacuum holes; and
- e. unsealing ~~the entrance holes~~; and said openings.
- f. ~~allowing the thermoset resin to infuse into the under-layer.~~

23. (Original) A method as in Claim 22 wherein said step of drilling said vacuum holes further includes the sub-steps of:

- a. inserting valves into the ~~entrance~~ opening and vacuum holes; and
- b. connecting the vacuum valves to a vacuum source.

24. (Original) A method as in Claim 21 wherein prior to said step of tightly wrapping a dry under-layer over the roll core outer surface, said method comprises the further step of applying an adhesive to the roll core surface.

25. (Original) A method as in Claim 21 wherein said sub-steps b through f are carried out while the covered roll is oriented substantially horizontally.

26. (Withdrawn)

27. (Previously added) A method as in Claim 21 wherein said roll core base has a longitudinal axis, wherein said under-layer comprises at least three sub-layers, with each of said sub-layers being formed of densely packed long continuous fibers, and wherein said dry under-layer is provided so that the fibers of one of said at least three sub-layers extend parallel to said longitudinal axis, the fibers of another of said at least three sub-layers extend perpendicularly to said longitudinal axis, and the fibers of still another of said at least three sub-layers extend randomly.

28. (New) A method for producing a covered roll, the covered roll having a multi-layered construction, said method comprising the steps of:

- a. providing a roll core base, said roll core base having two ends, an axial length therebetween, a central region and an outer surface;
- b. providing a dry under-layer formed of densely packed fibers;
- c. tightly wrapping said under-layer circumferentially around said roll core base;
- d. applying a covering layer over the dry under-layer to provide an annular axially extending resin infusion channel between said outer surface and said covering layer, said resin infusing channel being filled with said densely packed fibers of said dry under-layer;
- e. providing openings through said covering layer in the vicinity of each of said ends of said roll core base, said openings extending radially inward to said under-layer; and
- f. applying a low viscosity thermoset resin to said openings with vacuum to infuse said resin into said dry under-layer, said infusing proceeding from said ends of said roll core base to said central region, to cause said resin to intimately bind with said densely packed fibers of said dry

under-layer, whereby said infusing occurs in an axial direction over substantially the entire axial length between said two ends of said roll core base.

29. (New) A method for producing a covered roll, the covered roll having a multi-layered construction, said method comprising the steps of:

- a. providing a roll core base, said roll core base having two ends, an axial length therebetween, a central region and an outer surface;
- b. providing a dry under-layer formed of densely packed fibers;
- c. said dry under-layer being formed of a plurality of sublayers, at least one sublayer of said plurality of sublayers having randomly oriented densely packed fibers and at least one sublayer of said plurality of sublayers having substantially continuous unidirectional densely packed fibers;
- d. tightly wrapping said under-layer circumferentially around said roll core base;
- e. applying a covering layer over the dry under-layer to provide an annular axially extending resin infusion channel between said outer surface and said covering layer, said resin infusing channel being filled with said densely packed fibers of said dry under-layer;
- f. providing openings through said covering layer in the vicinity of each of said ends of said roll core base, said openings extending radially inward to said under-layer; and
- g. applying a low viscosity thermoset resin to said openings with vacuum to infuse said resin into said dry under-layer, said infusing proceeding from said ends of said roll core base to said central region to cause said resin to intimately bind with said densely packed fibers of said dry under-

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layer, whereby said infusing occurs in an axial direction over substantially the entire axial length between said two ends.